

AVIATION TECHNOLOGY

(CIP: 47.0609)

Occupational Skills

The student demonstrates the specified level of competency in occupational skills:

0	1	2	3	4
No Exposure	Introduced	Practiced	Entry Level	Competency

0 1 2 3 4

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A.

Identify Hangar and Shop Safety Hazards

(Vermont Standards: 1.17, 2.2, 2.4, 2.6, 2.7, 3.2, 3.3, 3.4, 3.5, 7.14, 7.18)

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B.

Solve Problems Using Principles of Mathematics

(Vermont Standards: 7.6, 7.7, 7.8, 7.10)

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C.

Solve Problems Using Principles of Physics

(Vermont Standards: 7.6, 7.11, 7.13, 7.16)

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D.

Identify Basic Components of Aircraft (G102-A)

(Vermont Standards: 7.16)

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E.

Perform Aircraft Cleaning and Corrosion Control (G102-B)

(Vermont Standards: 7.12, 7.17)

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F.

Interpret Blueprints and Drawings and Draw Sketches (G102-C)

(Vermont Standards: 1.1, 1.2, 1.4, 5.29, 7.11)

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G.

Identify Structural Materials and Perform Basic Material Processes (G102-D)

(Vermont Standards: 7.1, 7.12)

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H.

Select and Use Regulations, Publications, and Records (G103-A)

(Vermont Standards: 1.1, 1.2, 1.3, 1.13, 1.14)

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I.

Exercise Mechanic's Privileges and Limitations (G103-B)

(Vermont Standards: 3.15)

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J.

Document Aircraft Records (G103-C)

(Vermont Standards: 1.6, 1.8, 1.13, 1.14, 1.15, 2.2, 3.15)

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K.

Perform Aircraft Ground Handling and Servicing (G104-A)

(Vermont Standards: 1.15, 1.22)

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L.

Use Hand and Power Tools and Precision Measuring Instruments (G104-B)

(Vermont Standards: 1.3, 7.7, 7.18)

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M.

Identify and Select Aircraft Hardware (G104-C)

(Vermont Standards: 7.10)

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N.

Fabricate and Install Rigid and Flexible Fluid Lines and Fittings (G104-D)

(Vermont Standards: 7.1, 7.11)

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O.

Compare and Record Aircraft Weight and Balance (G104-E)

(Vermont Standards: 7.6, 7.7, 7.8)

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P.

Determine the Relationship of Voltage, Current, Resistance, and Power in Electrical Circuits (G105-A)

(Vermont Standards: 1.18, 1.19, 1.21, 1.22, 2.6, 2.8, 7.6, 7.8, 7.9, 7.10, 7.12)

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Q.

Compute and Measure Capacitance and Inductance (G105-B)

(Vermont Standards: 1.18, 1.19, 1.21, 1.22, 2.6, 2.8, 7.6, 7.8, 7.9, 7.10, 7.12)

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R.

Measure Voltage, Current, Resistance, and Continuity (G105-C)

(Vermont Standards: 1.18, 1.19, 1.21, 1.22, 2.6, 2.8, 7.6, 7.8, 7.9, 7.10, 7.12)

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S.

Read and Interpret Electrical Circuit Diagrams (G105-D)

(Vermont Standards: 1.18, 1.19, 1.21, 1.22, 2.6, 2.8, 7.6, 7.8, 7.9, 7.10, 7.12)

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T.

Inspect and Service Batteries (G105-E)

(Vermont Standards: 7.12, 7.17, 7.18)

DIRECTIONS

Evaluate the student by checking the appropriate box to indicate the degree of competency. The rating for each competency should reflect **employability readiness** rather than the grades given in class.

Rating Scale:**0 No Exposure**

1 Introduced – The student has been exposed through non-participation instruction (e. g., lecture, demonstration, field trip, video).

2 Practiced – The student can perform the task with direct supervision.

3 Entry-level Competency – The student can perform the task with limited supervision and/or does not perform the task to standard (a typical entry-level performance expectation)

4 Competency – The student consistently performs task to standard with no supervision (on at least two occasions or at instructor's option)

AVIATION TECHNOLOGY

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A. Identify Hangar and Shop Safety Hazards (S101-A)

- A.001 Select correct fire extinguisher for class of fire.
- A.002 Properly lift a heavy object.
- A.003 Complete hazard check of hangar and shop area(s).
- A.004 Complete an accident report.
- A.005 MSDS

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B. Solve Problems Using Principles of Mathematics (G101-A)

- B.001 Convert digits between the decimal and binary number systems.
- B.002 Add, subtract, multiply and divide whole numbers.
- B.003 Add, subtract, multiply and divide decimal fractions.
- B.004 Multiply and divide by scientific notation.
- B.005 Add, subtract, multiply and divide common fractions.
- B.006 Add and subtract mixed numbers.
- B.007 Convert numbers between common fractions and decimals.
- B.008 Add, subtract, multiply and divide signed numbers.
- B.009 Convert decimal numbers to percentages.
- B.010 Determine ratios.
- B.011 Solve problems involving proportions.
- B.012 Extract roots and raise numbers to a given power.
- B.013 Determine area and volume of various geometrical shapes.
- B.014 Use conversion tables to convert units between the English and the metric systems.

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C. Solve Problems Using Principles of Physics (G101-B)

- C.001 Describe the physical and chemical nature of matter.
- C.002 State the formulas for work and power.
- C.003 Explain power.
- C.004 Solve problems related to levers.
- C.005 State Newton's Laws of Motion.
- C.006 State the difference between speed and velocity relative to bodies in motion.
- C.007 Explain the three methods of heat transference.
- C.008 Explain the use of the four common temperature scales.
- C.009 Convert temperatures between common temperature scales.
- C.010 State the formula for the general gas law.
- C.011 Calculate pressure and volume of gases.
- C.012 State Pascal's Law and Bernoulli's Principle.
- C.013 Calculate force from pressure and area in a hydraulic cylinder.
- C.014 Solve problems in fluid mechanics related to Pascal's Law.



D. Identify Basic Components of Aircraft (G102-A)

- D.001 Define the four forces of flight.
- D.002 Identify the basic components of aircraft structures.



E. Perform Aircraft Cleaning and Corrosion Control (G102-B)

- E.001 Identify common types of corrosion found in aircraft structures.
- E.002 Perform aircraft cleaning.
- E.003 Explain the chemical neutralization process for aluminum alloys.
- E.004 Describe protective coatings used on aluminum alloys.
- E.005 Select processes used for corrosion control of magnesium parts.
- E.006 Perform aircraft corrosion control.



F. Interpret Blueprints and Drawings and Draw Sketches (G102-C)

- F.001 Identify types of aircraft drawings
- F.002 Use orthographic exercises to construct missing views and lines.
- F.003 Identify types of sectional views.
- F.004 Make sketches using appropriate sketching techniques.
- F.005 Make three-view sketches of isometric sketches or drawings.
- F.006 Match types of pictorial views to their correct descriptions.
- F.007 Make isometric sketches.
- F.008 Identify types of lines commonly found on blueprints.
- F.009 Determine dimensions and notes on aircraft blueprints.
- F.010 Determine tolerancing for dimensions on aircraft drawings.
- F.011 Name information found in the title block of an aircraft drawing.
- F.012 Interpret information on graphs.
- F.013 Perform basic geometric exercises.
- F.014 Interpret an aircraft drawing.



G. Identify Structural Materials and Perform Basic Material Processes (G102-D)

- G.001 Perform basic heat-treating.
- G.002 Match the three types of wood used in aircraft construction to their correct descriptions.
- G.003 Match wood species to their correct descriptions.
- G.004 Name the two major classifications of plastic resins used in aircraft construction.
- G.005 Perform a foam core/glass fiber lay-up of simple fiberglass repair.
- G.006 Match types of penetrants to their characteristics.
- G.007 Perform a liquid-penetrant inspection.
- G.008 Perform a magnetic particle inspection.



H. Select and Use Regulations, Publications and Records (G103-A)

- H.001 Name the FAA operational level with which the A & P technician will most often communicate.
- H.002 Match descriptions and titles of FARs related to maintenance to their correct numbers.
- H.003 Select, read and interpret FAA regulations, manufacturer's publications and technical data.
- H.004 Interpret a Type Certificate Data Sheet.



I. Exercise Mechanic's Privileges and Limitations (G103-B)

- I.001 Describe the privileges of a certified repair technician.
- I.002 Define the types of maintenance and the certificate rating required for approval for return-to-service.
- I.003 Define the types of inspections and the certificate rating required for approval for return-to-service
- I.004 Interpret FAR Part 65.
- I.005 Interpret FAR Parts 43 and 91.



J. Document Aircraft Records (G103-C)

- J.001 Interpret FAR Parts 43 and 91 requirements related to aircraft record files.
- J.002 Explain the relationship between an inspection checklist and Appendix D of FAR Part 43.
- J.003 Perform log book entries for maintenance and inspection.
- J.004 Interpret FAR Part 91 applicable to aircraft airworthiness directives.

- J.005 Perform maintenance record entries of airworthiness directives compliance.
J.006 Interpret Form FAA 337 and FAR 1 Part 43, Appendix B.



K. Perform Aircraft Ground Handling and Servicing (G104-A)

- K.001 Perform aircraft tiedown.
K.002 Perform as a signal person for a taxiing aircraft.
K.003 Identify aircraft fuels.
K.004 Perform reciprocating engine run-up.
K.005 Perform aircraft taxiing.



L. Use Hand and Power Tools and Precision Measuring Instruments (G104-B)

- L.001 Determine tap and body drill sizes.
L.002 Interpret the National Taper Pipe Thread Size Chart.
L.003 State the formula used to determine the amount of torque to be used when an adapter is added to the torque wrench.
L.004 Determine the force to be applied to the fastener by a torque wrench.
L.005 Interpret drawings of micrometer readings.
L.006 Use the micrometer caliper.
L.007 Use the inside micrometer.
L.008 Use the depth micrometer.
L.009 Use vernier caliper to take inside, outside and depth measurements.
L.010 Use hand and power tools safely and correctly



M. Identify and Select Aircraft Hardware (G104-C)

- M.001 Identify aircraft rivets by alloy, specification code, symbol and head marking.
M.002 Identify common aircraft bolts by head markings and head shapes.
M.003 Identify the main types of nuts used in aircraft construction.
M.004 Identify the common types of washers used in aircraft construction.
M.005 Identify washers by specification numbers and state their uses.
M.006 Identify types of pins commonly used in aircraft construction.
M.007 Identify Dzus, airlock and camlock fasteners.
M.008 Fabricate a Nicopress oval sleeve cable terminal
M.009 Identify, select and install aircraft hardware.
M.010 Safety aircraft hardware



N. Fabricate and Install Rigid and Flexible Fluid Lines and Fittings (G104-D)

- N.001 Perform tube flaring.
N.002 Perform tube bending.
N.003 Perform tube beading.
N.004 Fabricate flareless fitting tube assemblies.
N.005 Fabricate a double flare
N.006 Identify typical flareless fittings
N.007 Fabricate flexible hose assemblies
N.008 Distinguish between correct and incorrect flexible hose and rigid tubing installations.
N.009 Match color codes or names to the related fluid line code symbols.
N.010 Install rigid and flexible fluid lines.



O. Compare and Record Aircraft Weight and Balance (G104-E)

- O.001 Explain basic principles of weight and balance operation.
O.002 Perform empty weight calculation by fuel removal.
O.003 Explain how to determine if an aircraft equipment list has been updated.
O.004 Determine the empty-weight center of gravity relative to the main wheels of an aircraft.
O.005 Calculate extreme forward and aft loading conditions.
O.006 Calculate the aircraft useful load.
O.007 Weigh twin engine aircraft and compute and record aircraft weight and balance (platform scales and jacks).
O.008 Weigh Twin engine aircraft and compute and record aircraft weight and balance (electronic load cells).

- O.009 Weigh single-engine aircraft and compute and record aircraft weight and balance (platform scales and ramps).



P. Determine the Relationship of Voltage, Current, Resistance & Parallel Electrical Circuits (G105-A)

- P.001 Match metric prefixes to their correct multipliers.
 P.002 Multiply and divide numbers using the powers of ten.
 P.003 Discuss the relationship between static electricity and friction for an aircraft.
 P.004 Describe the magnetic lines of force of a permanent magnet.
 P.005 Explain the physical characteristics that affect the resistance of a conductor.
 P.006 Solve problems using the relationship between current, voltage and resistance series circuit.
 P.007 Compute the power dissipated in a resistive circuit.
 P.008 Distinguish between the characteristics of a series circuit and a parallel.
 P.009 Solve problems using the relationship between current, voltage and resistance in a parallel circuit.
 P.010 Solve problems using the relationship between current, voltage, resistance and power in a parallel circuit.
 P.011 Solve problems using the relationship between current, voltage, resistance and power in a series-parallel circuit.



Q. Compute and Measure Capacitance and Inductance (G105-B)

- Q.001 Determine current, resistance, voltage and power in a resistive AC circuit.
 Q.002 Identify basic AC electrical symbols.
 Q.003 Determine current, resistance, inductance, inductive reactance, impedance, power factor, phase angle, true power and apparent power in R-L circuits.
 Q.004 Determine values of voltage and current in the secondary windings of a transformer.
 Q.005 Determine current, resistance, capacitance, capacitive reactance, impedance, power factor, phase angle, true power and apparent power in R-C circuits.
 Q.006 Determine current, resistance, capacitance, capacitive reactance, power factor, phase angle, true power, apparent power, impedance, inductance and inductive reactance in R-C-L circuits.
 Q.007 Determine resonant frequency in an R-C-L circuit when inductance and capacitance are known.



R. Measure Voltage, Current, Resistance and Continuity (G105-C)

- R.001 Analyze an electrical circuit diagram, using Ohm's law and Kirchhoff's current and voltage laws.
 R.002 Construct a circuit from a schematic diagram.
 R.003 Determine continuity of a circuit.
 R.004 Analyze resistors in a circuit.
 R.005 Measure direct current voltage.
 R.006 Measure direct current.
 R.007 Perform circuit analysis using Ohm's law.
 R.008 Perform series circuit analysis using electrical measuring devices.
 R.009 Perform parallel circuit analysis using electrical measuring devices.



S. Read and Interpret Electrical Circuit Diagrams (G105-D)

- S.001 Interpret a wire/cable size chart.
 S.002 Interpret switch and derating chart to determine appropriate switch and derating factors.
 S.003 Interpret information from a schematic diagram and an equipment chart necessary for determining normal circuit operation.
 S.004 Interpret a wire and circuit protector chart.



T. Inspect and Service Batteries (G105-E)

- T.001 Determine the state of charge of a lead-acid battery.
 T.002 Inspect and service a lead-acid battery.
 T.003 Inspect and service a nickel-cadmium battery.